SECTION 802

INSTALLATION OF WATER SERVICE LINES

802.1 GENERAL: This section pertains to the water service line which extends from the distribution line to the water meter.

802.2 REFERENCES

802.2.1 American Society for Testing and Materials (Latest Editions) (ASTM)

A-48 Specification for Gray Iron Castings
B-62 Specification for Composition Bronze or Ounce Metal Castings
B-88 Specification for Seamless Copper Water Tube
D-2000 Classification System for Rubber Products in Automotive Applications

802.2.2 American Water Works Association (Latest Editions) (AWWA)

C-800 Underground Service Line Valves and Fittings

802.3 MATERIALS

802.3.1 SERVICE LINE FITTINGS: All service line fittings shall be in full compliance with the latest revision of AWWA Standard C 800, except as modified herein. Service line fittings will be of brass which has a composition of 85 percent copper, 5 percent tin, 5 percent lead, and 5 percent zinc. Fittings will be of the type required for the type of service line being installed. All stops shall be of the round, full opening type with no restriction in the opening less than the nominal size. Fittings incorporating a threaded plastic gripper and "O" ring seal may be utilized in lieu of the flared configuration. All service pipe and fittings shall be designed to sustain and operating pressure of 150 psi.

802.3.2 COPPER SERVICE PIPE: The 3/4" to 2" copper service pipe shall conform to ASTM B 88 and shall be Type K, unless otherwise specified. Copper tubing shall be bent with approved tube benders without any kinks or sharp bends. Cutting of tubing will be performed with cutters designed for that purpose.

802.3.3 TAPPING SADDLES:

802.3.3.1 Service saddle bodies shall be of cast iron, ductile iron or bronze; straps, nuts, bolts, and washers shall be of stainless steel or bronze; gaskets shall be vulcanized elastomeric rubber or synthetic rubber compound.

802.3.3.2 The saddles shall be tapped for the type of thread being used on the corporation stop.

802.3.3.3 Tapping saddles for PVC C900 pipe shall have bronze straps and shall be installed as per the manufacturer's printed recommendations. Only tapping saddles on the approved City Engineer's product list will be used.

802.3.4 METERS: Meters are furnished and installed by OWNER for new service line installations. For replacement and relocation work the meters will be furnished by the OWNER and installed by the CONTRACTOR.

802.3.5 METER

802.3.5.1 METER BOXES FOR 3/4"-1" Meters:

802.3.5.1.1 Meter boxes with two meters shall be centered on adjacent property lines.

802.3.5.1.2 The meter box is to be part of an underground enclosure for water meters and will have a cast iron cover plate or lid.

802.3.5.1.3 Meter box will be cast in one piece to form a hollow rectangle and new material or recycled materials shall be used in its manufacture.

802.3.5.1.4 The box material shall have the following minimum mechanical properties at variable ambient temperatures of -20°F to 120°F: compressive strength = 10,000 psi, tensile strength = 1,500 psi and flexural strength = 7,500 psi.

802.3.5.1.5 During testing of the materials at the above ambient temperatures no visual cracking, crazing, checking, blistering, surface pitting or deformation will be noted.

802.3.5.1.6 The finished meter box shall have the following physical properties:

802.3.5.1.6.1 Maximum wall deflection shall not exceed 1/8" at any one point when subjected to earth pressures or forces created during backfilling.

802.3.5.1.6.2 Material used for making the box shall be non-biodegradable when buried and/or exposed to water. Life expectancy of the box shall be at least 20 years.

802.3.5.1.6.3 Overall weight of the box component shall not exceed 80 pounds.

802.3.5.1.6.4 Inside dimensions of the box shall be: width = 16 ½ inches, length = 22 ½ inches, and depth = 24 inches. See Standard Detail Drawings for further dimensions and configurations. This meter box is for one and two meter installations.

802.3.5.1.6.5 Inside and outside surfaces of walls shall be reasonable smooth and free of burrs.

802.3.5.1.6.6 All materials used for box construction shall be approved for use in domestic water supply system.

802.3.5.2 METER COVER AND LID:

802.3.5.2.1 Lightweight and heavyweight meter box covers and lids shall be of Gray Iron casting materials. The light weight type is for use in sidewalk and unpaved areas not subject to traffic loads. The heavyweight type is for use in driveways and along streets having mountable curbs. The size, dimensions and details of the castings are as shown in the Standard Detail Drawings.

802.3.5.2.2 The casting shall conform to ASTM A 48, Class 30. The castings shall be true to pattern in form and dimensions and be free from pouring faults, sponginess, cracks, blowholes or other defects. Castings shall be filleted boldly at angles and arises shall be sharp and true. Edges shall be rounded or chamfered. The castings shall be thoroughly cleaned and the parting lines, grates, and risers ground flush. The lid shall seat firmly in the cover without rocking. The lid top surface shall be flush with the top surface of the cover. The lid shall be easily removed from the cover.

802.3.5.2.3 The cover and lid shall have, integrated in the casting top, a corrugated design to provide a nonslip surface. The lid shall have, integrated in the top of the casting, the words "CITY WATER METER." The cover and lid shall be asphalt painted with coal tar paint. The paint thickness shall not exceed 30 mils.

802.3.5.3 METER BOX FOR 1 ½" AND 2" METERS:

802.3.5.3.1 The meter box is to be part of an underground enclosure for water meters.

802.3.5.3.2 The meter box and cover with lid shall be selected from those on the approved City Engineer's product list.

802.3.5.3.3 The material used for manufacturing the box, cover and lid shall be new or recycled materials and shall have the following minimum mechanical properties at ambient temperatures from -20°F to 120°F: compressive strength = 11,000 psi, tensile strength = 1,700 psi and flexural strength = 7,500 psi.

802.3.5.3.4 During testing of the materials at the above ambient temperatures no visual cracking, crazing, checking, blistering, surface pitting or deformation will be noted.

802.3.5.3.5 The finished meter box shall have the following physical properties:

802.3.5.3.5.1 Box, cover and lid shall be rated for a load capacity of 1,000 lbs over a 4" x 4" area.

802.3.5.3.5.2 The overall weight of the box, cover and lid and extension shall not exceed 80 lbs.

802.3.5.3.5.3 Maximum wall deflection shall not exceed 1/8" at any one point when subjected to earth pressures or forces created during backfilling.

802.3.5.3.5.4 The material used for making the box shall be non-biodegradable when buried underground and exposed to water.

802.3.5.3.5.5 The minimum dimensions of the box, cover and lid shall conform to the Standard Detail Drawings.

802.3.5.3.5.6 The walls inside and outside of the box shall be reasonably smooth and free of burrs.

802.3.5.3.5.7 Cover of the meter box must have a non-skid surface and have "CITY WATER METER" inscribed on the top. The cover shall be secured to the box by bolts.

802.3.5.3.5.8 All materials used for constructing the box, cover and lid shall be approved for use in domestic water supply systems.

802.3.5.4 LOCATIONS OF METER BOXES: Meter Boxes shall be located within the right-of-way as shown on Standard Detail Drawings.

802.3.6 CORPORATION STOP: Corporation stop shall be AWWA thread inlet by compression-type outlet or Pack Joint to fit 3/4", 1", 1 ½" and 2" copper tubing. The socket-housing or the rotating ball shall be PTFE coated to avoid metal to metal contact, ensure adequate seal and provide smooth turning operation. Outlet shall have a nominal size Standard AWWA C-800 copper service thread to fit existing City drilling and tapping machine equipment. All casting shall be ASTM B-62 and outlet seals shall be Buna-N

802.3.7 TAILPIECE: The service will be placed in the meter box with a copper tubing tailpiece for 3/4" to 2", protruding from the standard concrete pad into the owner's property with a Pack Joint capped fitting to which the plumber can connect.

802.3.8 COPPERSETTERS: Coppersetters shall have

pipe connections for Type K Copper Tubing. The coppersetter shall be an assembly of brass and copper tubing with a bottom bar, shall have a bronze ball valve on the inlet side of the meter, and shall be furnished with coupling gaskets. The coppersetters shall be selected from the approved City Engineer's product list. Coppersetters shall have temporary threaded plugs in the meter connections and shall be furnished free of excess grease. A stabilizer bar of 12 inches by ½ inch galvanized pipe shall be inserted in the yoke assembly as shown on the Standard Detail Drawings. A coppersetter with dual check valve shall be installed as per the Cross Connection Control section.

802.3.9 CROSS CONNECTION CONTROL: Aproved dual check valves shall be installed on all services within pressure zones 0-W, 1-W and 1-E. For water customers having private wells located within water pressure zones other than ZONES 0-W, 1-W, and 1-E, that connect to the municipal water system shall: a) agree to permanently abandon the use of private wells by plugging the wells in accordance with C.O.A.'s procedures prior to connecting to the municipal water system; or b) agree to completely sever the private well from the premises existing plumbing system and install an approved dual check valve at the water meter. The owner of the premises shall also sign a covenant that runs with the land that the private well shall not be re-connected to the premises previous plumbing.

802.4 SERVICE LINE INSTALLATIONS

802.4.1 NEW 3/4" TO 2" SERVICE LINES:

802.4.1.1 New Service lines are complete new services in accordance with Standard detail Drawings and shall include the following:

802.4.1.1.1 Furnish and install tapping saddle, corporation stop, tubing, coppersetter, meter box, cover and lid and tailpiece, complete in place, including excavation and backfill and flushing.

802.4.1.2 Meters will not be installed as part of this work. However, construction of the meter box and placement of the yoke shall be such that at a later date the meter may be installed properly and easily.

802.4.1.3 The CONTRACTOR shall be responsible for proper vertical and horizontal location of the box over the meter yoke.

802.4.2 REPLACEMENT 3/4"-2" SERVICE LINES:

802.4.2.1 Replacement service lines are essentially new services installed in conjunction with the replacement of the water main. Unless otherwise specified in the Contract Documents, all existing services shall be replaced with new material between the water main and the meter yoke.

802.4.2.2 Replacement service line work does not include any relocation or rehabilitation of the meter. The work shall consist of the following:

802.4.2.2.1 Furnish and install tapping saddle, corporation stop, coppersetter and tubing, complete in place, including flushing.

802.4.2.2.2 Re-connection to the meter.

802.4.2.2.3 All necessary excavation and backfill and concrete removal and replacement.

802.4.3 3/4" thru 2" METER RELOCATION:

802.4.3.1 A meter relocation is the relocation of an existing meter to a position closer to or further away from the centerline of the street. The meter relocation item is to be used when the service line is not replaced.

802.4.3.2 A new meter box and cover shall be furnished and installed.

802.4.3.3 A coppersetter shall be used in the reinstallation of the meter, for services sized 3/4" thru 2", and shall be of a height to properly position the meter, vertically, within the box, as shown in the Standard Detail Drawings.

802.4.3.4 When moving the meter toward the property line, new tubing shall be installed, from the inlet connection point of the meter to be relocated, to the coppersetter, and a tailpiece shall be installed on the outlet side of the coppersetter to the property line. When the existing meter is moved toward the street, the gap in the service line shall be filled with new tubing, including connectors.

802.4.3.5 When determined by the City, the existing meter shall be replaced by the CONTRACTOR with a meter furnished by the City. 1" meters will be substituted for 1-1/4" meters.

802.4.3.6 The work and materials shall include the coppersetter, connector pieces, excavation, tubing, backfill, removal of old meter and meter box, installation of new meter, meter box, and concrete pad, necessary disconnections, and connections of the house and meter box service lines, complete restoration of the affected site (including landscaping) and adjustment of the meter to the level shown in the Standard Detail Drawings.

802.6 3/4" thru 2" METER REHABILITATION AND REPLACEMENT

802.6.1 3/4" THRU 2" METER REHABILITATION:

802.6.1.1 Meter rehabilitation is applicable where the meter box deficiency exists. Deficiencies include obsolete, broken above or below grade, improperly sized, or existing location does not allow access to the meter, curb stop or connector pieces (does not meet new installation standards). When any of these conditions exists, the meter box and meter installation shall be rehabilitated, as authorized by the ENGINEER.

802.6.1.2 The work and materials shall include:

802.6.1.2.1 Furnish and install a new coppersetter, meter box, cover and lid and concrete pad.

802.6.1.2.2 Furnish and install any reconnection pieces necessary for a complete service restoration.

802.6.1.2.3 Flushing out of the service line.

802.6.1.2.4 Site restoration (including any necessary landscaping) and cleanup.

802.6.2 3/4" thru 2" METER REPLACEMENT: Meters to be replaced under "Service Line Replacement" and "Meter Relocation" work shall be performed in accordance with the following procedure:

802.6.2.1 All existing meters involved with "Service Line Replacement" and "Meter Relocation" work shall be replaced by the CONTRACTOR with a meter provided by the City as determined by the CITY.

802.6.2.2 The replacement meter shall be requested, in writing by the CONTRACTOR from the Water Utility Division with documentation of address and size meter for each meter to be replaced, project name and number, and CONTRACTOR's name.

802.6.2.3 The request shall be received at least seven days prior to issuance of meters.

802.6.2.4 The CONTRACTOR will be issued a work order form with each meter issued. The CONTRACTOR shall return the work order form along with the replaced meter, within five days of replacement of the meter to the Meter Shop.

802.6.2.5 The work order must be turned in with the specific meter for which the meter replacement was issued. The replaced meter shall have a tag affixed to the meter, by the CONTRACTOR, showing the CONTRACTOR's name, and project name and address from which the meter was removed.

802.6.2.6 The CONTRACTOR shall handle all meters so as not to damage them and shall be responsible for the meters from the time of receipt to turn in. Stolen or lost meters shall be replaced at the CONTRACTOR's expense.

802.7 METER PIT FOR SERVICES 3" AND LARGER: Meter pit construction details and the installation of the pipe, valves and meter details will be shown on the construction plans.

802.8 MEASUREMENT AND PAYMENT

802.8.1 METERED SERVICE LINE INSTALLATIONS: For 3/4 inch thru 2 inches, new service lines, service line replacements and transfers, meter relocations, and meter replacements, and meter rehabilitation shall be measured and paid for as a completed unit of installation in accordance with the applicable items contained in the Bid Proposal, which payment shall include all materials, labor and equipment required to install, flush and place into service the applicable item.

802.8.2 SERVICE LINE TUBING: Unless otherwise authorized in the Contract Documents or by the ENGINEER, service line tubing shall be considered incidental to the applicable pay item established in the Bid Proposal.

802.8.3 PAVEMENT REMOVAL AND REPLACEMENT: Unless otherwise authorized in the Contract Documents or by the ENGINEER, pavement removal and replacement shall be considered incidental to the applicable pay item established in the Bid Proposal.